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ABSTRACT

The study assessed parent-child interactions of five normal hearing children and five hearing-impaired children, aged 3-5. The mothers and fathers were administered the Mother-Child Relationship Evaluation (MCRE) to evaluate parental attitudes. Each parent and child participated in a 10-minute interactive play activity. The child's language level was estimated by the Peabody Picture Vocabulary Test-Revised. No significant differences were found between the mothers' and the fathers' attitudes. No significant differences were found between parents of normal hearing children and parents of hearing-impaired children on any of the four attitude scales of the MCRE. However, a significant difference was found between the two groups of children in terms of estimated language level, with hearing-impaired children being less advanced. Results also showed that parents of normal hearing children used more verbal communication which was longer and more sophisticated, while parents of hearing-impaired children used more nonverbal communication. However, only 30% of the nonverbal communication was in the form of sign language, the mode of communication necessary for the hearing-impaired children. Includes 20 references. (Author/JDD)

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PARENT-CHILD INTERACTION WITH HEARING-IMPAIRED CHILDREN AND NORMAL HEARING CHILDREN

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ABSTRACT

The purpose of this study was to assess parent-child interactions of normal hearing children and hearing-impaired children. Five normal hearing children ($\bar{x}$=4.0 years), and their parents formed one group. Five hearing-impaired children ($\bar{x}$=4.4 years), and their parents formed the second group. The parents were administered the Mother-Child Relationship Evaluation (MCRE) to evaluate parental attitudes. Each parent and child participated in a ten-minute interactive play activity. The child's language level was estimated by the Peabody Picture Vocabulary Test-Revised (PPVT-R). Results of this study indicated that there was no significant difference on any variable between the mothers and fathers. In addition, no significant differences were found between parents of normal hearing children and parents of hearing-impaired children on any of the four attitude scales of the MCRE. However, a significant difference was found between the two groups of children in terms of estimated language level. Furthermore, significant differences were found between parents of normal hearing children and parents of hearing-impaired children in terms of verbal communication and nonverbal communication used with their children. The results indicated that parents of normal hearing children used more verbal communication which was longer and more sophisticated; and parents of hearing-impaired children used more nonverbal communication. However, only 30% of the nonverbal communication was in the form of sign language, the mode of communication necessary for these hearing-impaired children. These results suggest that hearing-impaired children receive less information from their primary caregivers than do normal hearing children.

INTRODUCTION

According to Ross (1964), as parents plan for and await the birth of their expected child, they develop an expectation of what their child will be like. The parents wish for a "perfect child" and have fears of a "damaged child." When the child is born with a defect, for example a hearing loss, the parents' wishes and expectations of their "ideal child" are crushed (Solnit & Stark, 1961). According to these authors, there appears to be some discrepancy between the parents' wishes for an "ideal" child and the reality of their actual child. When the child's defect is diagnosed, the parents' initial reaction is shock, followed by emotions such as anxiety and guilt. In order to cope with their emotions, psychological defenses may come into play, with denial being the most common. The reaction of "this cannot be true" allows parents to protect themselves, maintain hope, and minimize the reality (Vernon, 1979). If the parents' denial is prolonged, a delay in acceptance may be destructive to the deaf child and the family (Mindel & Vernon, 1971). According to Vernon and Mindel (1971), the early years of a child's life (before school age) are crucial ones for learning and using language, and "freely communicat(ing)" with his parents. Consequently, if these years pass without adapting to the child's defect, this communication deficit may never be fully recovered. As the parents move from the denial stage and come to realize their child's defect is a fact of life, they experience a period of mourning and grief (Vernon, 1979). During this period of mourning, parents' attitude toward their disordered child may range from acceptance to rejection. Bryant (1971) identified three parent-child relationships: (1) parents accept their disordered children, (2) parents reject their disordered children, and (3) parents compensate for their reactions to their disordered children. For example, parents may dislike or reject their handicapped child, which may

arouse feelings of guilt. However, because parents believe they are not allowed to dislike their child, overprotective attitudes may be substituted for emotions of hatred.

The meaning of the defective child may differ between the mother and father because of the differences in parental roles, and each parent may have a different level of acceptance. The maternal role is to nurture and provide basic needs for the young infant, whereas the paternal role is to plan and provide for the future (Boles, 1959). According to Crowley et al. (1982), society places different roles on each parent, which puts both the mother and father in an unfair position. It is unfair for the mother placing an overwhelming amount of responsibility taking care of the child. It is unfair for the father because he becomes distant from the child and gives up the opportunity to learn about the child's defect. Tringo (1970) looked at the acceptance level of males and females toward several disabilities (including deafness, mental illness, mental retardation) and concluded that females tend to be more accepting of disabilities than males, possibly due to age or educational level. Consequently, one might hypothesize that the mother, assuming she is the handicapped child's primary caretaker, may be more accepting. Because she interacts more directly with the child, she will have learned to deal with the defect more effectively. However, the contrast may also be hypothesized. Spending more time with the disordered child, she may become frustrated more easily, and also more fully recognize the extent of the handicap; therefore, developing a more negative attitude which may lead to rejection of the child. Neuhaus (1969) concluded that when parental attitudes differed, maternal attitudes outweighed the paternal attitudes in the effects upon the child. This was concluded from results which indicated that deaf children, with a positive mother and a negative father, were better emotionally

adjusted than those with a positive father and a negative mother. No matter which parent develops a more positive attitude, effective coping with the child's defect begins only after the parents understand the reality of the child's defect (Mindel & Vernon, 1971). Consequently, total acceptance may be delayed. Martin et al. (1987) stated that parents may require up to one year to accept their child's defect. During this period of adapting to the child's defect and learning to accept the child, the parent-child interaction and communication may suffer because, in the case of the deaf child, he becomes isolated from language development if he is required to utilize only residual hearing. As a result, the deaf child may experience isolation from situations in which he fails to be a participant in communication (Mindel & Vernon, 1971).

One cannot be sure if effective parent-child communication facilitates a positive attitude toward the child, or if an accepting attitude precedes effective communication. It may be hypothesized that because of the parental roles and the amount of time spent with the child, the method of communication used with the child may differ between the mother and father. It may be possible, assuming the mother spends more time with the child, that she may communicate more in the child's mode of communication, thus achieving a more effective relationship. For example, the mother may use more sign language or nonverbal communication with her hearing-impaired child than the father uses.

Two studies have examined the types of verbal and nonverbal communication used by mothers with hearing-impaired children in comparison with normal hearing children. Goss (1970) compared language used by mothers of hearing children with that used by mothers of deaf children. The results concluded that mothers of hearing children were more likely to use questions, and ask for opinions and suggestions. However, mothers of hearing-impaired children were more likely to show disagreement, tension, and antagonism; and give more

suggestions. These results indicated that mothers of deaf children were less likely to use verbal praise, but more likely to show verbal hostility than mothers of hearing children.

Wedell-Monnig and Lumley (1980) concluded that in mother-child dyads, mothers of deaf children were more active members than the child. In addition these mothers decreased the amount of interaction over time. Also, the mother served as the dominant member and communicated in multiple modalities, both vocal and visual. In contrast, mothers of hearing children spent more time with their children, and utilized vocal means to communicate. Also, the child, as well as the mother, posed as the dominant member of the dyad at various times. These results suggest that in order to compensate for their child's sensory loss, parents of deaf children overwhelm the child with stimulation. In doing so, they come to control the parent-child interaction. In addition, the parents' dominance may be tied to learned helplessness. Deaf children may come to learn that their actions have no effect on their environment, and they may tend to depend upon their parents. This may also be supported by the author's conclusions that deaf children spent more time within their mothers' reach than did hearing children. Consequently, it may be suggested that deaf children are less willing to spend time away from their mothers.

As seen above, communication styles differ among parents of hearing-impaired children and parents of normal hearing children. Therefore, it may be hypothesized that children with a higher language level may have parents which communicate more effectively in the child's mode of communication. Several studies have concluded that there is a delay in the deaf child's language performance (Kretschmer, 1976). Consequently, if hearing-impaired children have lower language skills, it may be hypothesized that the parent-child communication may be less effective than if they have higher language skills.

For example, if a child has a lower language level, less information may be exchanged between the parent and the child.

Few studies of communication patterns have included the fathers of hearing-impaired children. They, too, are an important part of the family and influence their children. Therefore, it appears necessary to investigate their impact on the child.

Because parents and their normal hearing children utilize the same mode of communication and do not experience a communication breakdown, it may be hypothesized that these parents may have a more accepting attitude. In addition, being raised in an environment designed for the hearing and being able to benefit from auditory stimuli, it may be expected that parents of normal children may utilize more verbal communication. In contrast, most parents of hearing-impaired children appear to go through a denial stage following the diagnosis of their child's hearing impairment. Consequently, the parents may fail in stimulating the child's needs, which may cause a communication barrier between the parents and the child. Therefore, it may be hypothesized that parents of hearing-impaired children may have a more rejecting attitude. In addition, if the parents have come to fully accept their child's defect, it may be expected that they will utilize more nonverbal communication.

The purpose of this study was to investigate the following questions:

(1) How do parental attitudes correlate with the parents' communication styles?

(2) How does the mother's attitude and communication style compare with the father's, with in the same family?

(3) How does the child's language level relate to the parents' communication style?

(4) How do the parameters of parental attitudes, parental communication styles, and child's language level differ across the two different populations of children (hearing-impaired and normal hearing)?

The following hypotheses were made:

(1) The maternal attitude may be more accepting of the child than the paternal attitude within the same family, across the two populations of children.

(2) Within the same family the mother may communicate or interact more effectively (in the child's mode of communication) than the father does, across the two populations of children.

(3) The parents who are more accepting of their children may have more effective communication with them, whereas the parents who hold more rejecting attitudes toward their children may have less effective communication with them.

(4) Parents of normal hearing children may have a more accepting attitude and a more effective communication style with their children. In contrast, parents of hearing-impaired children may have a more negative attitude and less effective communication style with their children.

(5) Normal hearing children may have a higher language level than hearing-impaired children.

(6) Children with higher language levels may have parents who communicate in the child's mode of communication.

METHODS

Subjects

Subjects were divided into two groups. One group consisted of five normal hearing children (one girl and four boys) and both parents, except for one child, where only the mother participated. The family size ranged from

three to five members living in the household. All children were in the three-to-five age range with the mean age of 4.0 years. The second group consisted of five hearing-impaired children (two girls and three boys) and both hearing parents. Four of the five children were classified as severely hearing-impaired or deaf. These families relied on sign language to communicate with their children. In addition, the parents' signing skill varied widely, ranging from parents who were especially fluent to parents who were still learning sign language. One hearing-impaired child possessed a moderate to severe hearing loss; however, he wore two hearing aids which boosted him to only a mild hearing loss. This family communicated primarily in the verbal mode; however, the child did utilize sign language at school. The family size of this group ranged from three to six members who lived in the home. The age at which the hearing-impairment was diagnosis ranged from birth to three years. These children also ranged from three-to-five years of age, with the mean age of 4.4 years.

Procedure

All data collection was carried out in the subjects' homes with one exception, which took place on the University of Iowa campus (Wendell Johnson Speech and Hearing Clinic).

Initially, the parents were interviewed to collect information regarding caretaking roles, family environment, history of the child's hearing-impairment, and their use of sign language.

The parental attitudes were assessed by the Mother-Child Relationship Evaluation (MCRE) (Roth, 1961), which was given to both parents. This questionnaire was adapted for the fathers by changing "mother" to "father" in the respective questions. This questionnaire has four scales: (1) acceptance, (2) overprotection, (3) overindulgence, and (4) rejection, which were normed on

80 middle-class mothers ages, 25 to 35, who lived in the same community.

Because vocabulary tests correlate with overall language development, the Peabody Picture Vocabulary Test-Revised (PPVT-R) (Dunn & Dunn, 1981) was utilized. Only the first forty items were used, which were spoken to the hearing children, and both spoken and signed to the hearing-impaired children.

Each parent and child participated in a ten-minute structured activity, where they were asked to build a depicted windmill using a preschool Lego kit. The parents decided the order of participation, thus it was not counterbalanced which gender went first. Due to problems with video equipment, the parent-normal hearing child interactions were audiotaped and the parent-hearing-impaired child interactions were videotaped. The ten-minute sessions were divided up into forty fifteen-second segments. Six types of verbal behaviors and five types of nonverbal behaviors were later scored for whether each type of behavior occurred in each segment. See Appendix A for the types and definitions of verbal and nonverbal behaviors analyzed, and Appendix B for an example of the score sheet used.

Analysis of Interaction

Due to the differences in taping, the nonverbal behaviors of the normal hearing dyad were scored live as they appeared. In contrast, the nonverbal behaviors of the hearing parent-hearing-impaired child dyad were scored from a videotape. The verbal behaviors of both groups were transcribed in longhand and coded into subcategories from the written transcriptions.

Statistical Analysis

Means and standard deviations were calculated for all variables, except for the PPVT-R, on two levels of comparison: (1) condition (normal hearing vs. hearing-impaired) and (2) gender (father vs. mother). The mean PPVT score were only calculated on the condition level (see Table 1). The parents' verbal acts

were analyzed in three different ways. Mean scores were calculated for (1) verbal total: defined as the number of different verbal behaviors that occurred in each fifteen-second segment over the ten minutes; (2) total utterances: defined as the total number of verbal statements or speech sequences that occurred over the entire ten minutes; and (3) mean length of utterance (MLU): defined as the total number of morphemes divided by the total number of utterances, which is a reliable predictor of the complexity of language. In addition, mean scores were also calculated for nonverbal behaviors.

RESULTS

The results were examined to determine differences in parental attitudes, child's language level, and communication style. Data were analyzed using a two-way analysis of variance (ANOVA) with two condition factors (normal hearing and hearing-impaired) and two gender factors (mother and father). No significant differences were found on any variable between the mother and father; thus, the discussion of the results will focus on comparison of the two populations of children. (Tables 2-4 contain individual scores.)

Analysis of Means

Table 1 contains the means and standard deviations for all variables for the four groups of parent-child dyads. Table 5 contains the mean scores and significance levels for the two groups (normal hearing vs. hearing-impaired) for all variables. No significant differences were found between the mean scores of each group on any of the four attitude scales of the MCRE. In additions, both groups fell within the average range in terms of parental attitudes.

The PPVT-R scores for each group represented the mean scores out of a total possible of forty. The procedure using the PPVT-R was to limit the

children to the first forty items. All normal children reached a ceiling; however, two of the five hearing-impaired children did not reach the forty-level mark because of the termination criterion (six errors of the last eight responses). The difference between the two groups was significant ($p<.05$). However, this appears to be an artificial measure of the children's true language because of the procedure limitation. If the children could have gone on, the normal children would have obtained higher scores and the difference would have been even greater. The results show that hearing-impaired children identified 37% less vocabulary words than normals.

There was a significance difference in the verbal total between the two groups of parents ($p<.05$). These results suggest that hearing-impaired children received 33% less verbal behaviors from their parents than did the normal children. The normal children received approximately two verbal behaviors every fifteen seconds, whereas the hearing-impaired received approximately 1.3 verbal behaviors every fifteen seconds.

Results also show a significant difference in total utterances between the two groups of parents ($p<.05$). These figures appear to more accurately reflect the actual amount of verbal behaviors used due to scoring procedure. These figures represent all spoken utterances to the normal hearing children, and all spoken plus signed and spoken utterances used with hearing-impaired children. The results indicate that hearing-impaired children received 32% less verbal utterances than normal children. Of those mean total utterances used with hearing-impaired children, 44.9% consisted of verbal only utterances. Most of those utterances (243/401 or 60%) were made by the two parents of hearing-impaired subject #5; the child with only a mild hearing loss who mostly utilized verbal communication. In addition, 55.1% of the mean total utterances consisted of verbal utterances which were also signed. Parents of hearing-

impaired children averaged 5.2 signed only utterances, where most of those utterances (39/50 or 75%) were made by the two parents of hearing-impaired subject #1, whose parents were fluent in their signing skill.

Results also show a significant difference in the parent MLU used with each group of children ($p<.01$). This suggests that parents' MLU of normal hearing children were longer and more syntactically complex. In contrast, it appears that hearing-impaired children received shorter and less complex utterances from their parents, a 50% reduction compared to normals.

In addition to verbal behaviors, significant differences were also found between the two groups in terms of nonverbal behavior ($p<.01$). The mean nonverbal totals suggest that normal children received 50% less nonverbal behaviors from their parents than hearing-impaired children. Of the nonverbal behavior used with hearing-impaired children, only 30% was in the form of sign language. The other 70% was comprised of other nonverbal behaviors which were also used with normal hearing children (see Figures 1 and 2).

Correlational Analysis

The results from the correlation analysis are contained in Table 6. Results show a positive correlation between the child's PPVT-R score (language level) and the parents' MLU ($r=.72$, $p<.01$). This suggests that children with higher language levels received longer and more complex verbal utterances from their parents. Secondly, there appears to be a negative correlation between the PPVT-R score and the nonverbal total ($r=-.66$, $p<.01$). This indicates that children who have a lower language level received more nonverbal communication from their parents. In addition, a positive correlation exists between the parents' total utterances and their MLU ($r=.73$, $p<.01$). This suggests that children who received more verbal utterances from their parents also received longer and more complex utterances. Finally, results show a negative

correlation between the parents' MLU and their nonverbal total ($r=-.62$, $p<.01$). This indicates that as parents' utterances became longer and more sophisticated, their use of nonverbal behavior decreased.

When subdividing the verbal behaviors into the six subcategories listed in Appendix A, differences are also evident. When parents communicated with their normal hearing children, approximately 29% was in the form of questions, 11% was in the form of suggestions, and 29% was in the form of directives (see Figure 3). In contrast, when parents of hearing-impaired children communicated with their children, approximately 19% was in the form of questions, 1% was in the form of suggestions, and 42% was in the form of directives (see Figure 4).

DISCUSSION

It was hypothesized that mothers would be more accepting of their children than fathers. However, results do not confirm this hypothesis. A possible explanation may be that of the families that participated, all but one normal hearing family indicated that the caretaking roles were equally distributed between the mother and the father. The one exception indicated that the mother was the primary caretaker. In addition, all hearing-impaired families indicated that the caretaking roles were also equally distributed between the two parents. Thus, it may be hypothesized that both parents spend equal amounts of time with their child, possibly resulting in no gender differences in attitude. It was also hypothesized that parents of normal hearing children would be more accepting of their children than parents of hearing-impaired children. However, results do not show this either. Consequently, parental attitudes do not appear to be an important factor in assessing communication styles. A second explanation that may account for the lack of differences is that the hearing-impaired families that volunteered for this study may not accurately represent the majority of this population due to

their heightened interest in their child's impairment.

Not surprisingly, normal hearing children appear to be more advanced than hearing-impaired children in terms of language development. Already at an early age a delay in the language development of hearing-impaired children is evident. However, although the PPVT-R was used to obtain an estimated language level, it may not have served as an ideal measure of language development due to the difference in delivery of words to the two groups. As mentioned before, the words were spoken and signed, using Signed English translation, to the hearing-impaired children. Due to the variations in signs, some children may have received lower scores because of the signs used by the examiner. Instances were noted where the parents indicated the child utilized a slight variation of the sign or the child indicated his version of the sign. Consequently, the PPVT-R scores may not accurately reflect the child's language development.

As expected, our results indicated that parents of normal hearing children and parents of hearing-impaired children communicate with their children differently. These results may be realistic of actual parent-child interactions because this study was conducted in the subjects' homes. Thus, a familiar environment may have facilitated the interaction. In terms of the overall amount of nonverbal behavior used, the hearing-impaired children received more from their parents than the normal hearing children received from their parents (see Figure 5). However, only 30% of the nonverbal communication hearing-impaired children received from their parents was in the form of sign language; the main mode of communication most of these children need. The other 70% of nonverbal behaviors (comprised of gestures, smiles, physical contact, and eye contact) they received were similar types of nonverbal communication parents used with their normal hearing children. Thus, hearing-

impaired children who require sign language for communication may not be receiving adequate stimulation from their primary caretakers. According to Schum's Developmental Model of Deaf Social Behavior (1987), parents of hearing-impaired children may fall somewhere within three levels of sign language usage. These levels range from single signs or a combination of signs to a fluent level of sign language, where abstract concepts are conveyed to the child. Thus, although the child's ability to use language is important, the parents' language stimulation ability appears to be a critical factor to all areas of the developing hearing-impaired child.

In contrast, in terms of the overall amount of verbal behaviors used, as expected normal hearing children received more verbal communication from their parents (see Figure 5). The verbal stimulation they received was longer in length and more syntactically complex. This appears to be an important factor for the child's language development during the preschool years, a time when language is rapidly developing. Hearing-impaired children received less verbal stimulation and the stimulation they received was shorter in length and less sophisticated. According to Cheskin (1981), who studied language of three mothers spoken to deaf children, ages 1.6 to 2.10 years, concluded that mothers spoke to their children in short sentences and frequently repeated their own utterances. However, no measure was used to measure repetition of parents' utterances in this study; subjectively, it was clear that parents of hearing-impaired children repeated their utterances more than parents of normal hearing children.

The reason for the simplification of parents' verbal utterances seem to be unclear. We cannot be sure if parents reduce their verbal utterances to match the child's language level or if parents reduce their verbal utterances due to their signing skill. We can only make a hypothesis based on one

hearing-impaired family. The parents of this family were extremely fluent in sign language; however, their MLU's were limited to 2.7 and 2.8. This suggests that the reduction may not be due to the parents' signing skill, but rather to match the child's language level. Furthermore, according to the Direct-Influence Model of maternal language, the mother determines her language level based on the perception of her child's performance level at any certain time (White, 1984). Therefore, it may be hypothesized that the parents of hearing-impaired children view their child's performance as limited, thus adjust their language level the fit the child's level.

The results show that hearing-impaired children received fewer verbal utterances from their parents than normal hearing children, and that the types of verbal acts they received differ from normal hearing children. It appears that normal children received 10% more questions and 10% more suggestions from their parents than hearing-impaired children. These conclusions support Goss's (1970) findings (previously cited) which indicated that mothers of hearing children were more likely to utilize questions and ask for their child's opinions and suggestions. In contrast, hearing-impaired children in this study received 13% more directives than did the normal children. This trend supports White's (1984) conclusions which stated that the use of imperatives (directives) decreases as normal hearing children get older. In contrast, the use of imperatives remains high for hearing-impaired children, accounting for a third of all utterances produced. Brinich (1980) suggested that when people have difficulty establishing "reciprocal communication" with their children, they may shift toward using more directive language. This tendency may be seen as an "adaptive response" to situations which language abilities are limited (White, 1984).

The above conclusions support Wedell-Monnig's (1980) findings (also

previously cited) which stated that in mother-child dyads, both the mother and the normal hearing child assumed the dominant role interchangeably. In comparison, this study showed that normal hearing children were allowed to give more input through answering questions and offering suggestions, thus allowing a more active role in the parent-child dyad. In contrast, the Wedell-Monnig (1980) study indicated that the parents of hearing-impaired children assumed the dominant role while interacting with their children. In comparison, this study showed that hearing-impaired children were limited in their input by the use of parental directives. Consequently, these children appear to assume a less active role while communicating or interacting with their parents.

When assessing a variable such as communication styles of parents with hearing-impaired children, it appears necessary to specify the degree of hearing loss. An example of this comes from two of the hearing-impaired children. Subject #5 wore two hearing aids which boosted his hearing up to a mild hearing loss. Consequently, his parents reported that they primarily utilized verbal means to communicate; however, when he became frustrated trying to understand something, they used sign language. In addition, his parents reported that he used sign language at school. Results show that his PPVT-R score was comparable to the scores of normal hearing children of the same age. In addition, results indicate that his mother and father utilized a total number of utterances similar to parents of normal hearing children and MLU's of 4.6 and 6.8 respectively. Finally, results show that the parents failed to use sign, and the total amount of nonverbal behavior used was much less than other parents of hearing-impaired children. In sum, with only a mild hearing loss and the ability to use verbal means to communicate, he appeared to have developed language in parallel to normal hearing children. In contrast, subject #2 was classified as severely hearing-impaired. Her parents utilized

sign language, however not fluently. Her mother and father used only a small amount of verbal acts; total utterance values of 50 and 30 respectively. In addition, these parents also utilized less nonverbal acts than the other parents of hearing-impaired children. These results suggest that the parents and the child may not be communicating effectively with each other. During the ten-minute interaction session, it appeared that each parent and the child participated in parallel play, just as two young children do who are not competent conversationalists. Thus, little information was exchanged between the two participants. In addition, her PPVT-R score was much lower than scores of normal hearing children. In sum, depending on the degree of hearing loss a child possesses, very different communication styles can emerge. In addition, the degree of hearing loss can have different effects on the child's language development.

Consequently, future studies may limit their subject population to children with a specified hearing loss to obtain a better representation of that population of children. In addition, other considerations may need to be made for future research. For example, all parents indicated that they used sign language, but with differing degrees of fluency. As mentioned previously, one of the five hearing-impaired families was fluent, and other families indicated that they wished they could sign better. Thus, it may be important to obtain information regarding how long they have known sign language and how long after the diagnosis of their child's hearing-impairment did they begin to use sign language. This information would be helpful in evaluating the parents' communication style used with their children. It may also be important to match two groups in terms of language level instead of age, to determine if there is something unique about the way parents of hearing-impaired children communicate with their children or if parents of hearing

children also communicate with their children this way at a younger age. White (1984) indicated there is something unique in the verbal environment used with infants. This includes a simplification and a reduction in rate when speaking to younger infants. Thus, it may be hypothesized that parents of hearing-impaired children and parents of normal hearing infants communicate with their children (with similar language levels) in a similar fashion, possibly due to their children's limited language ability.

In summary, these results conclude that hearing-impaired children, even at a young age, are receiving less information from their primary caregivers. Thus, language development and communication between the child and his parents become very important for the development of the hearing-impaired child. This is important because during the preschool years, stimulation is believed to be a key factor for language development.

Therefore, these results may lead to a hypothesis that parents' signing skill may be an important element in communicating with their child. This, in turn, appears to influence the development of their child's vocabulary.

In addition, studies have focused on parent-child interactions comparing hearing-impaired with hearing children and language-impaired with normal children, but have not combined these three populations. It would be interesting to see how communicative interactions compare and differ among these three populations. It may be hypothesized that parents of language-impaired children may fall somewhere in between parents of hearing-impaired children and parents of normal hearing children in terms of communication style.

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Measure	F-N	M-N	F-H	M-H
Parent Attitude				
(a) acceptance				
M	63.8	52.0	52.2	53.0
SD	10.7	8.9	7.8	8.3
(b) overprotection				
M	38.6	44.0	41.8	37.0
SD	8.2	9.6	12.7	13.2
(c) overindulgence				
M	42.6	41.5	40.4	44.0
SD	8.3	10.8	11.1	16.2
(d) rejection				
M	40.4	42.8	45.0	47.0
SD	10.7	6.4	10.9	10.8
Peabody Picture Vocabulary Test-Revised (PPVT-R)*				
M	37.8		24.0	
SD	2.9		9.0	
Verbal Total*				
M	80.5	73.0	50.4	51.8
SD	20.8	17.1	13.3	21.5
Total Utterances*				
M	142.8	120.0	91.2	87.6
SD	41.2	39.6	30.4	42.1
Mean Length of Utterance** (MLU)				
M	6.6	5.6	3.0	3.8
SD	1.7	0.9	1.1	1.9
Nonverbal Total**				
M	42.0	47.3	91.4	85.2
SD	20.3	10.5	24.4	42.4

*difference between N vs. H ($p<.05$)
**difference between N vs. H ($p<.01$)

Table 1: Means and standard deviations on the verbal and nonverbal measures for the four parent-child groups.

SX	SUB#	Con	PPVT	A	OP	OI	R
F	1	N	37	47	49	52	53
M	1	N	37	43	58	52	53
F	2	N	40	73	37	40	43
F	3	N	39	73	30	32	27
M	3	N	39	55	39	47	40
F	4	N	40	65	45	50	32
M	4	N	40	63	37	40	39
F	5	N	33	61	32	39	47
M	5	N	33	47	42	27	43
F	1	H	32	66	39	47	42
M	1	H	32	55	37	42	42
F	2	H	21	50	54	56	42
M	2	H	21	42	49	69	66
F	3	H	17	50	56	34	58
M	3	H	17	53	45	47	43
F	4	H	15	47	32	37	53
M	4	H	15	65	39	37	45
F	5	H	35	48	28	28	30
M	5	H	35	50	15	25	39

Table 2: Individual scores of the four parental attitude scales.

SX	SUB#	CON	VQ	VS	VR	VCR	VD	VCM	VT	TU	TM	MLU
F	1	N	11	6	2	5	24	4	52	83	398	4.8
M	1	N	11	8	2	2	30	3	56	95	452	4.8
F	2	N	22	1	5	3	30	17	78	149	1318	8.8
F	3	N	26	11	18	2	24	15	96	174	1195	6.9
M	3	N	23	6	7	2	12	11	61	80	485	6.1
F	4	N										
M	4	N	27	19	15	3	16	4	84	166	1098	6.6
F	5	N	33	14	14	11	16	8	96	165	988	6.0
M	5	N	24	4	5	17	29	12	91	139	693	5.0
F	1	H	18	3	11	4	8	3	47	73	200	2.7
M	1	H	3	1	9	7	18	2	40	66	188	2.8
F	2	H	3	0	4	7	15	2	31	50	88	1.8
M	2	H	0	0	3	4	10	3	20	30	80	2.7
F	3	H	1	0	8	17	34	8	68	121	301	2.5
M	3	H	4	0	10	14	29	3	60	86	187	2.2
F	4	H	11	0	5	7	26	4	53	93	303	3.3
	4	H	13	1	2	4	33	17	70	132	626	4.7
F	5	H	21	0	3	3	15	11	53	119	552	4.6
M	5	H	21	0	4	0	28	16	69	124	838	6.8

Table 3: Individual scores of the six types of verbal communication and composite verbal scores.

SX	SUB#	CON	NSN	NG	NSM	NPC	NEC	NT
F	1	N	0	23	1	5	4	33
M	1	N	0	32	0	15	0	47
F	2	N	0	15	1	10	0	25
F	3	N	0	21	15	7	7	50
M	3	N	0	26	12	3	10	51
F	4	N	0	8	9	8	3	28
M	4	N	0	25	2	4	2	33
F	5	N	0	28	10	21	15	74
M	5	N	0	26	17	8	7	58
F	1	H	38	15	18	9	36	116
M	1	H	40	14	12	15	39	120
F	2	H	27	15	7	5	15	69
M	2	H	10	4	6	8	2	30
F	3	H	38	6	10	10	30	94
M	3	H	40	13	11	18	33	115
F	4	H	37	16	6	22	33	114
M	4	H	33	15	13	19	32	112
F	5	H	0	18	4	39	3	64
M	5	H	0	16	6	3	24	49

Table 4: Individual scores of the five types of nonverbal communication.

	NORMAL	HEARING-IMPAIRED	SIGNIFICANCE LEVEL
(1) Parental Attitude (t-scores)			
(a) acceptance	58	52	n.s.
(b) overprotection	41	39	n.s.
(c) overindulgence	42	42	n.s.
(d) rejection	41	46	n.s.
(2) Peabody Picture Vocabulary Test-Revised (PPVT-R)	38	24	<.05
(3) Verbal Total	76.8	51.1	<.05
(4) Total Utterances	131	89	<.05
(5) Mean Length of Utterance (MLU)	6.1	3.4	<.01
(6) Nonverbal Total	44.3	88.3	<.01

Table 5: Mean scores for dependent variables by condition. Significance levels from ANOVA procedure.

	r	SIGNIFICANCE
PPVT - MLU	.72	<.01
PPVT - Nonverbal Total	-.66	<.01
Total Utterances - MLU	.73	<.01
MLU - Nonverbal Total	-.62	<.01

Table 6: Correlation coefficients and significance levels from ANOVA procedure.

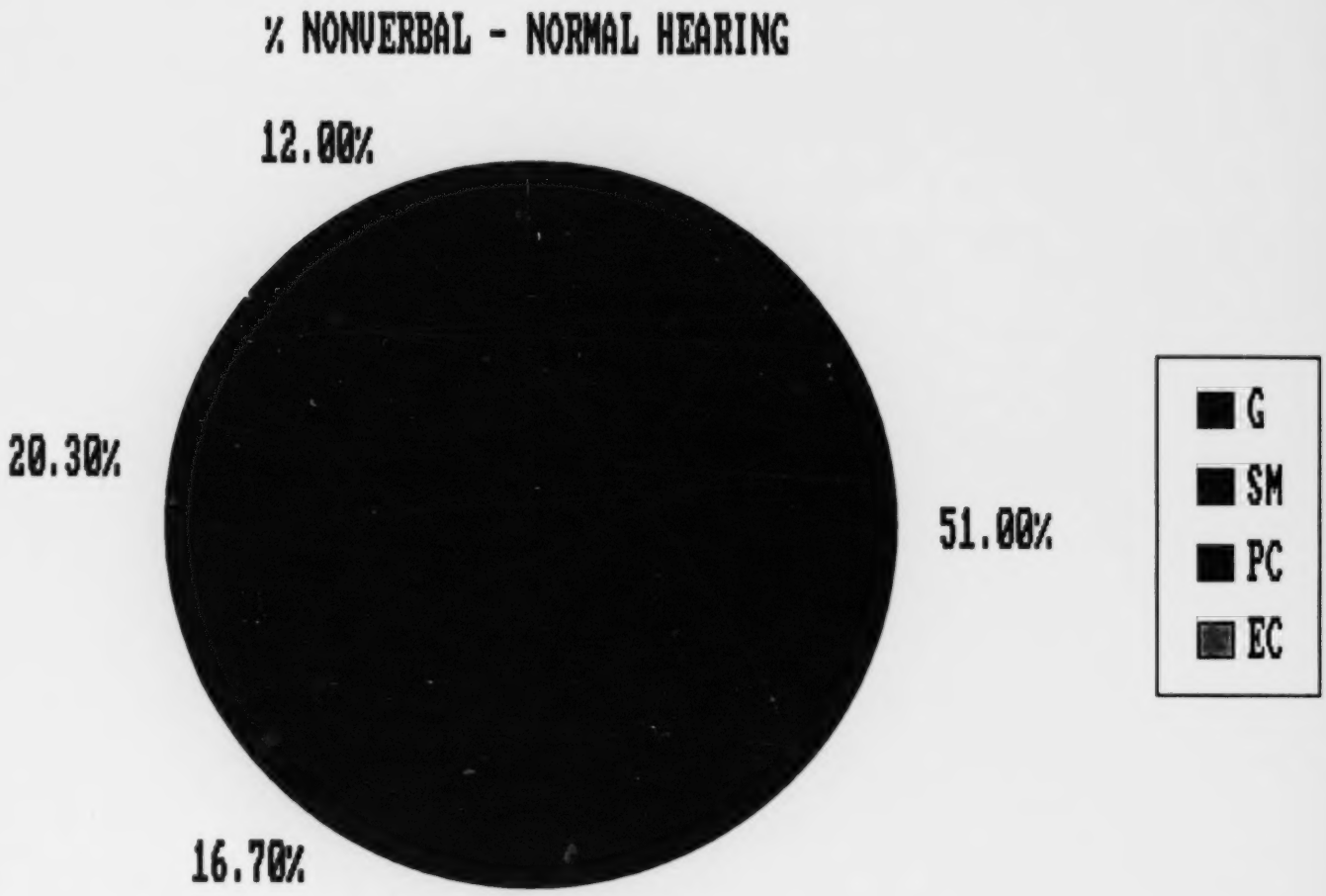


Figure 1: Percentages for the five subcategories of nonverbal communication used with normal hearing children.

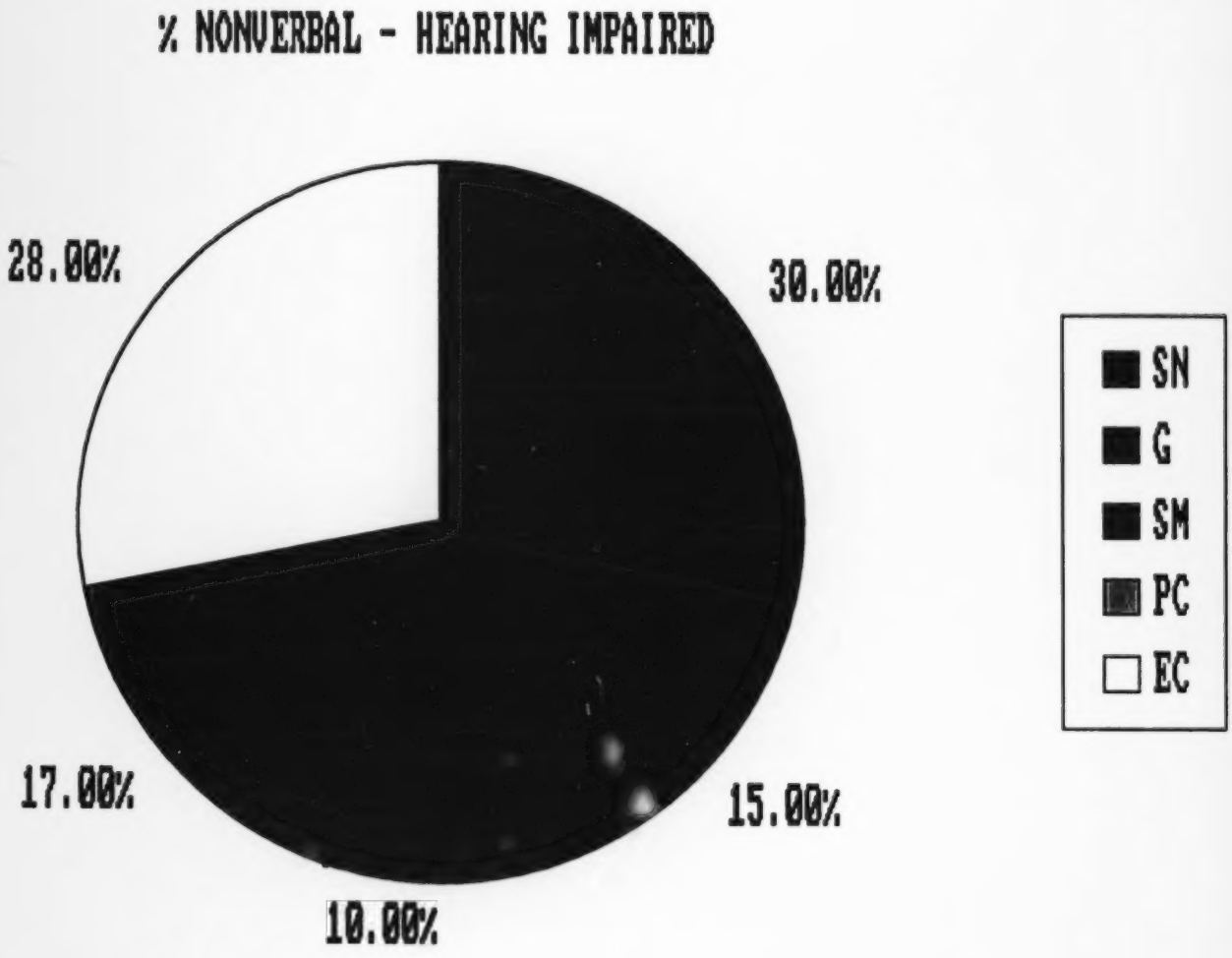


Figure 2: Percentages for the five subcategories of nonverbal communication with hearing-impaired children.

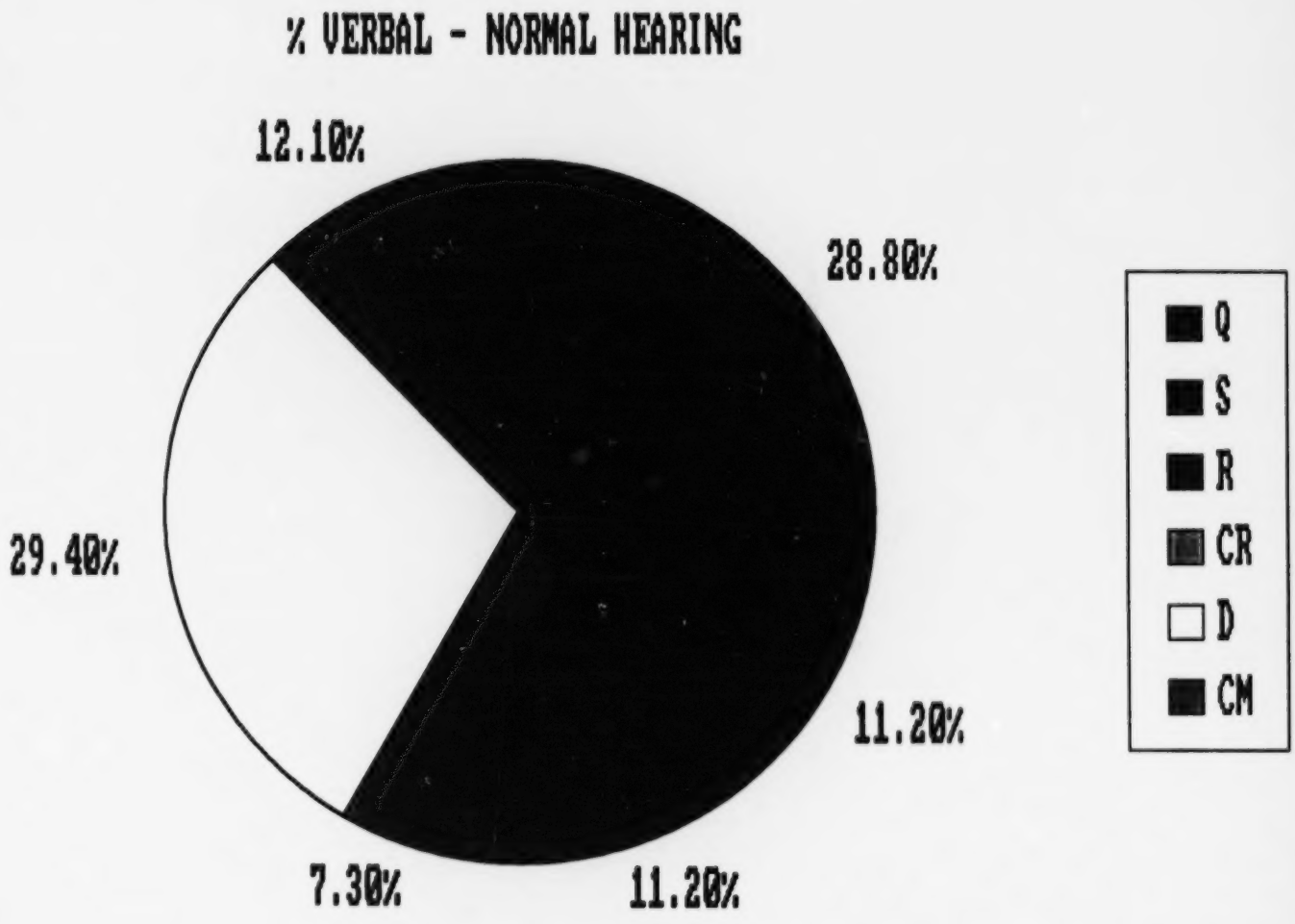


Figure 3: Percentages for the six subcategories of verbal communication used with normal hearing children.

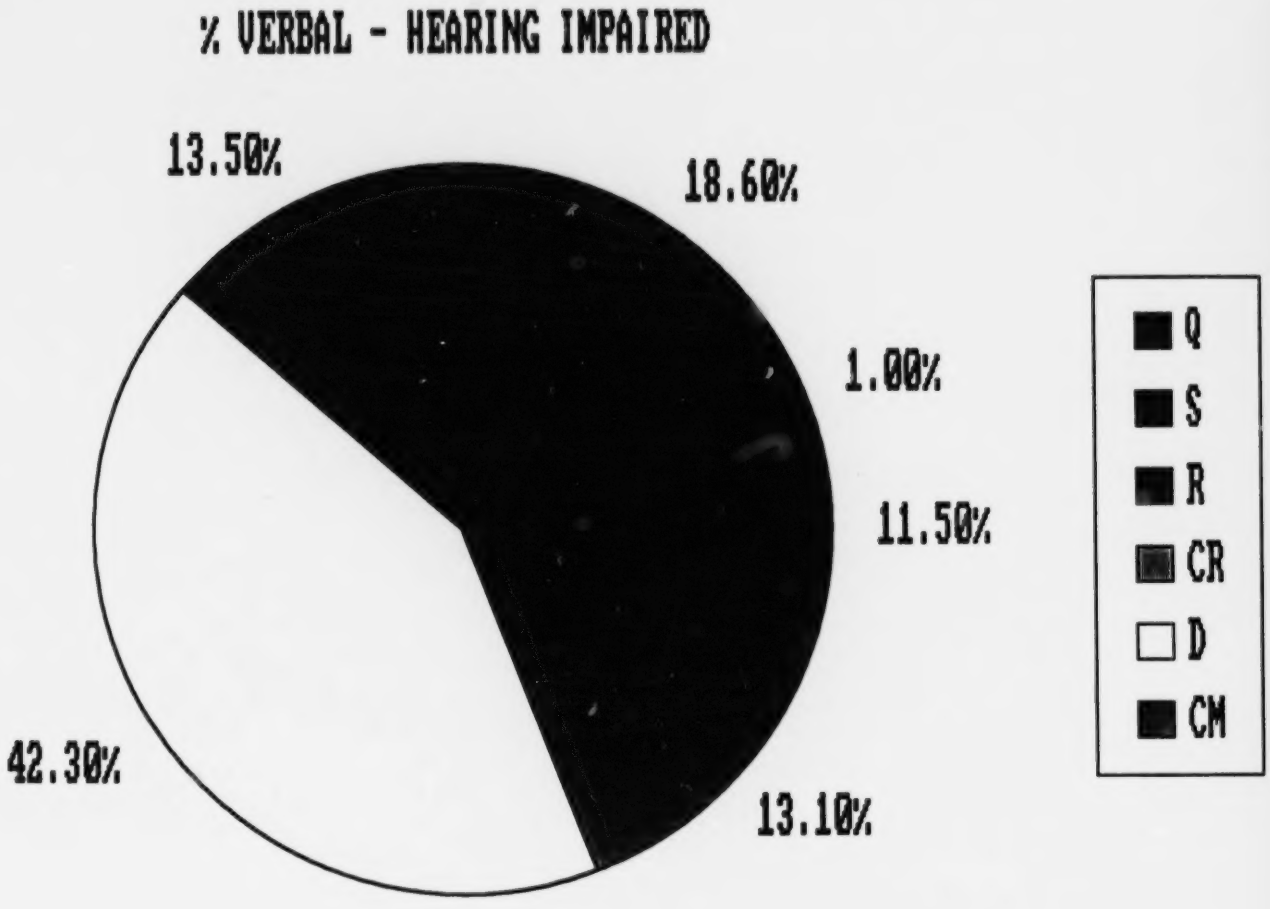


Figure 4: Percentages for the six subcategories of verbal communication used with hearing-impaired children.

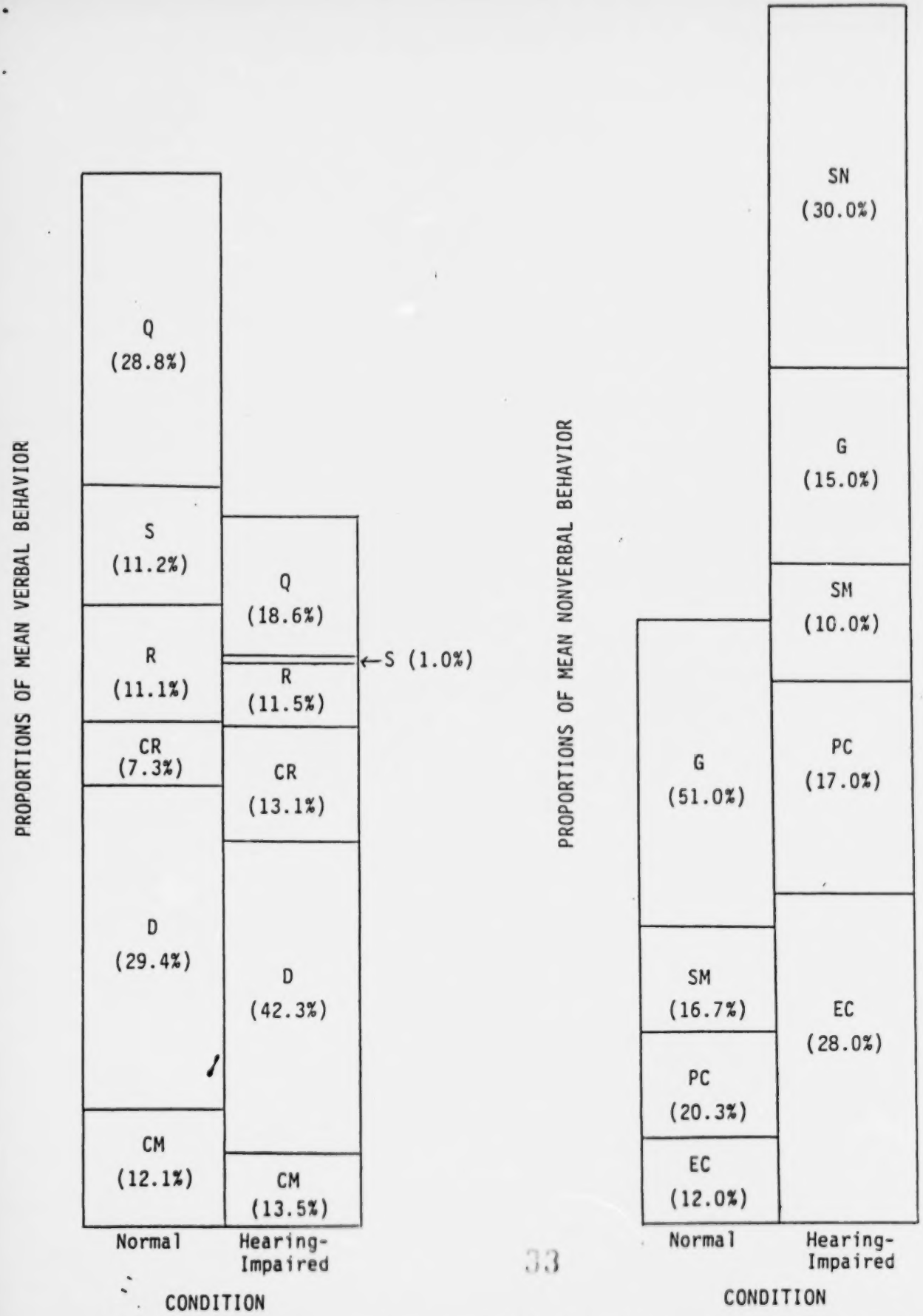


Figure 5: Overall verbal and nonverbal behaviors used with normal hearing children and hearing-impaired children.

REFERENCES

Boles, G. (1959). Personality factors in mothers of cerebral palsied children. Genetic Psychology Monograph, 59, 159-218.

Brinich, P.M. (1980). Childhood deafness and maternal control. Journal of Communication Disorders, 13, 75-81.

Bryant, J.E. (1971). Parent-child relationships: Their effect on rehabilitation. Journal of Learning Disabilities, 4, 325-329.

Cheskin, A. (1981). The verbal environment provided by hearing mothers for their young deaf children. Journal of Communication Disorders, 14, 485-496.

Crowley, M., Keane, K., & Needham, C. (1982). Fathers: The forgotten parents. American Annals of the Deaf, 127, 38-40.

Dunn, L.M. & Dunn, L.M. (1981). Peabody Picture Vocabulary Test-Revised. Circle Pines, Mn: American Guidance Service.

Goss, R.N. (1970). Language used by mothers of deaf children and mothers of hearing children. American Annals of the Deaf, 115, 93-96.

Kretschmer, R.R., Jr. (1976). Language acquisition. Volta Review, 78, 60-67.

Martin, F.M., George, K.A., O'Neal, J., & Daly, J.A. (1987). Audiologists' and parents' attitudes regarding counseling of families of hearing-impaired children. ASHA, 29, 27-33.

Mindel, E.D. & Vernon, M. (1971). They Grow in Silence. Maryland: National Association of the Deaf.

Neuhaus, M. (1969). Parental attitudes and the emotional adjustment of deaf children. Exceptional Children, 35, 721-727.

Ross, A. (1964). The Exceptional Child in the Family. New York: Grune and Stratton.

Roth, R.M. (1961). The Mother-Child Relationship Evaluation. Los Angeles: Western Psychological Services.

Schum, R.L. (1987). Communication and social growth: A developmental model of deaf social behavior. Presented at the "Mayo Clinic Audiology Symposium," Mayo Clinic, Rochester, MN.

Solnit, A.J. & Stark, M.H. (1961). Mourning and the birth of a defective child. Psychoanalytic Studies of the Child, 16, 523-537.

Tringo, J.L. (1970). The hierarchy of preference toward disability groups. Journal of Special Education, 4, 295-306.

Vernon, M. (1979). Parental reactions to birth-defective children. Postgraduate Medicine, 65, 183-189.

Vernon, M. & Mindel, E.D. (1971). Psychological and psychiatric aspects of profound hearing loss. In D. Rose (Ed.), Audiological Assessment (pp. 87-132). New York: Prentice-Hall.

Wedell-Monnig, J. & Lumley, J.M. (1980). Child deafness and mother-child interaction. Child Development, 51, 766-774.

White, S.J. & White, R.E.C. (1984). The deaf imperative: Characteristics of maternal input to hearing-impaired children. Topics in Lanugage Disorders, 4, 38-49.

APPENDIX A

Verbal Behaviors Scored:

(1) QUESTIONS (Q): parent asks for the child's opinions and suggestions.

(2) SUGGESTIONS (S): parent utilizes the word "maybe", or makes suggestions allowing the child to choose.

(3) REINFORCEMENTS (R): parent approves of the child's response and utilizes reinforcers, such as positive words.

(4) CORRECTIONS (CR): parent indicates the child's response was incorrect and corrects the child's behavioral error.

(5) DIRECTIVES (D): parent tells the child what to do.

(6) COMMENTS (CM): parent makes remarks regarding other topics during the activity.

Nonverbal Behaviors Scored:

(1) SIGN LANGUAGE (SN): parent uses sign language to communicate to the child.

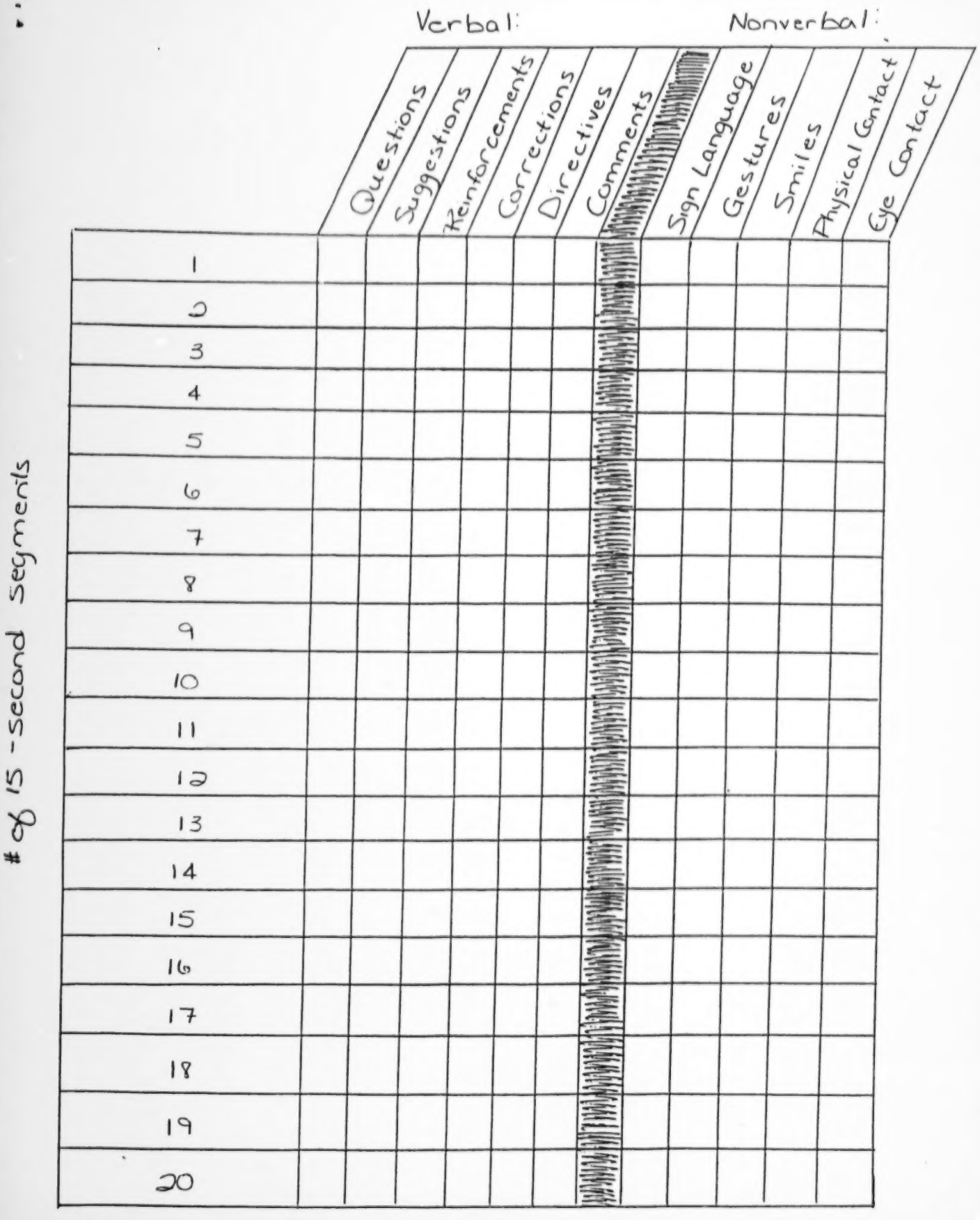
(2) GESTURES (G): parent uses arm/hand gestures to communicate to the child, (includes pointing).

(3) SMILES (SM): parent smiles at the child while communicating.

(4) PHYSICAL CONTACT (PC): parent touches the child while communicating or hands objects to the child.

(5) EYE CONTACT (EC): parent makes eye contact with the child while communicating.

APPENDIX B


Verbal:
Nonverbal:
Questions
Suggestions
Reinforcements
Corrections
Directives
Comments
Sign Language
Gestures
Smiles
Physical Contact
Eye Contact
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Verbal: Nonverbal:

# of 15-second segments

	Questions	Suggestions	Reinforcements	Corrections	Directives	Comments	Sign Language	Gestures	Smiles	Physical Contact	Eye Contact
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